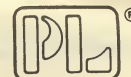


# the Buffer

A Quarterly Newsletter Published By Pro-Log Corporation

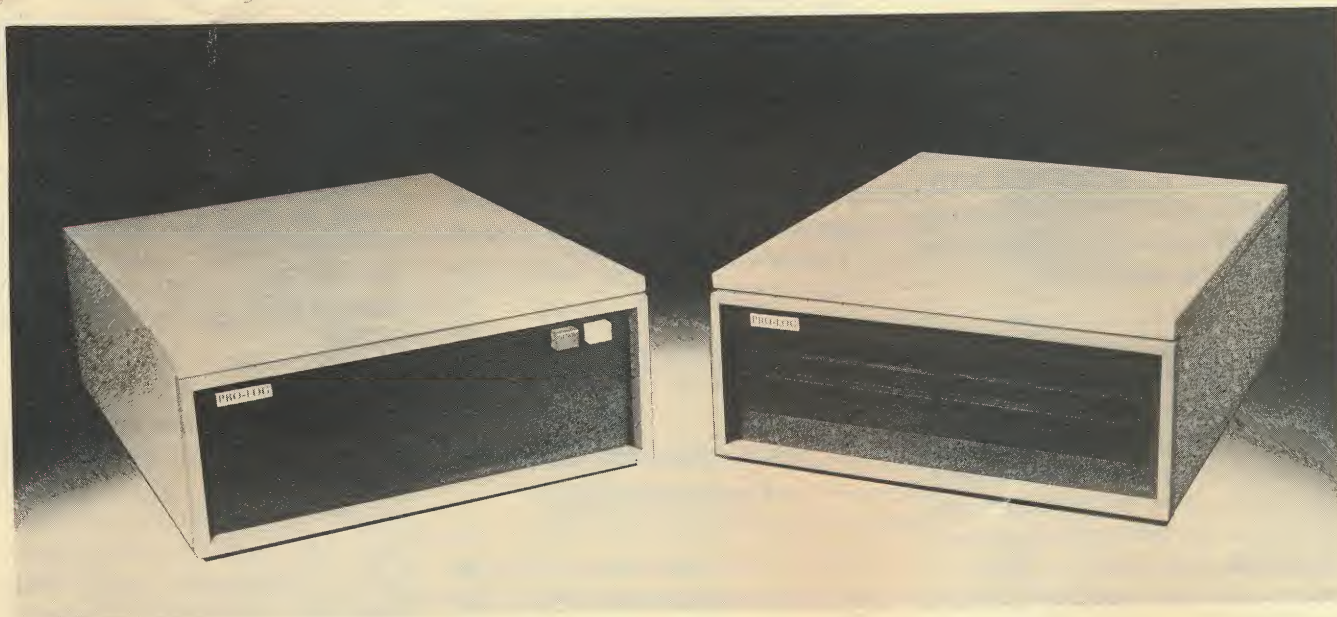


Sep 81

Wescon/81 Edition

Vol. I No. 5/Editor: Brian Jarman

August, 1981



701 Central μPackage

702 Floppy-Disk μPackage

## To Be Announced at Wescon/81

### New Pro-Log Product: STD Series 700 μPackages

Pro-Log will introduce its new product, packaged subsystem modules, at Wescon/81. The modules are a logical extension of Pro-Log's modular STD BUS concept.

#### 701 Central μPackage

One of the key subsystem modules, the 701 Central μPackage, houses a processor, memory, and input/output cards. Also, it contains a power supply, fan, connector panel, front panel, and a 16-slot or 24-slot STD BUS card cage.

Front-panel mounted power and reset switches are standard. Custom indicators and switches can be added to the front panel by the user.

The rear-mounted connector panel is removable for easy installation of interface connectors by the user. Switched AC outlets, on the rear panel, provide power to a second subsystem module.

#### 702 Floppy-Disk μPackage

The second subsystem module, the 702 Floppy-Disk μPackage, contains two 8-inch floppy-disk drives, power supply, fan, and interface connectors. When used with Pro-Log's 7387 Floppy-Disk Controller Card (STD BUS), the 702 provides 500 kilobytes of industry compatible, soft sector, formatted mass storage. This approach assures reliable performance and drive-to-drive inter-

changeability while still offering sufficient storage for most applications.

#### Rack-Mountable

The 701 and the 702 are designed to UL, CSA, VDE, and FCC requirements. They are both rack-mountable. Optional kits are available to the user for converting them to fully enclosed modules.

—————(Continued on Page 3)

## Inside —

STD BUS News .....	2
STD BUS Products .....	3
PROM Programmer News ....	5
People at Pro-Log .....	11
Courses & Seminars .....	13



# STD BUS News

---

## STD Manufacturers' Group

The STD Manufacturers' Group (STDMG) comprises manufacturers that manage and maintain the STD BUS standard and practice. Its goal is to enhance the value of the STD BUS to the users and to make it a viable standard. Regular meetings are scheduled to coincide with ELECTRO, WESCON, and MIDCON (see below for the upcoming WESCON meeting). STD BUS users are invited to participate.

### Current STDMG News

The STDMG has been seeking IEEE standardization of the STD BUS. A proposal for submittal to the IEEE was approved at the April meeting. It went to the IEEE Microprocessor Standards Committee on June 11, where members voted to petition the IEEE for approval to open project activity. If the petition is approved, the STDMG will be reorganized to operate as a subcommittee of the IEEE Microprocessor Standard Committee.

During the Electro/81 meeting of STDMG in April, a final draft of the STD Z80 timing and waveform specification was presented. The STDMG is working to get closure on this specification as well as closure on specifications for the STD 8085, STD 65-6800, and STD 8088. New study groups were formed to consider memory expansion methods and to define the physical backplane requirements.

### STDMG to Meet at WESCON/81 in September

The next STDMG meeting will be held at the WESCON/81 show in

San Francisco on Tuesday, September 15, from 1:00 to 4:00 p.m. Current study groups will present their findings and proposals then.

### STD BUS Documents Available

The STDMG maintains the "STD BUS Specification and Practice," a document that contains the STD BUS specification and recommended design practices for implementing nonbus features. Copies of this document are available, printed separately (check 60) or as part of the Series 7000 STD BUS Technical Manual (check 61).

---

## Formation of STD Users' Group

Some interest has been expressed in forming a users' group for the STD BUS, with suggestions for either a national group or regional groups.

The formation of any meaningful users' group, however, requires participation by interested parties. In this respect, Pro-Log Corporation is willing to participate in the activities of such a group and to provide assistance where possible.

Bill Shields of Anthem Electronics, in the San Diego, California area, is interested in exploring the formation of an STD Users' Group. Interested parties can contact Bill at (714) 453-9005 or call Dick Thomas at Pro-Log Corporation offices, (408) 372-4593.

Check 62 if you are interested in an STD Users' Group.

---

## National Rep Network

### First Rep Council Meeting Held in Monterey

Pro-Log's Rep Council, comprising key members of Pro-Log's National Rep Network, held its first meeting on May 7th and 8th in Monterey.

The intent of the Council is to participate in Pro-Log's management decisions that affect rep performance and to offer input that might improve Pro-Log's decision-making process.

Five Council members attended the meeting: Bob Stratton (Advanced Digital Group), Tom McCall (Manco), Jerry Horowitz (Technimat), Bob McMorran (Rep-Tron), and Al Martindale (Martindale Associates). Tom McCall was elected Council chairman.

Topics discussed at the first meeting included the role of the Council and its expectations, and a preview of Pro-Log's management objectives and expectations.

The Rep Council plans to meet twice a year. Typical agenda items that are scheduled for discussion at the meetings include new product ideas, new marketing strategies, and new rep compensation plans.

---

*We succeed in enterprises which demand the positive qualities we possess, but we excel in those which can also make use of our defects.*

*Alexis de Tocqueville*



# STD BUS Products

(Continued from Page 1) —————

In their enclosed form, the 701 and 702 modules make attractive, stand-alone units. Their clean, aesthetic lines — a key consideration in their design — enhance the appearance of the 701 and 702 when stacked. Whether rack mounted, used separately, or stacked, Pro-Log's  $\mu$ Package design suits the office as well as the laboratory.

## Interfaces

Power and signal cabling can be obtained from Pro-Log for interfacing one or two 702  $\mu$ Packages with one 701  $\mu$ Package. Input/output driver software comes with the 7387 floppy-disk controller card for interfacing with the user's software.

## Applications

The most appropriate use for the 701 Central  $\mu$ Package is in the laboratory environment. Also, the 701 is suitable for applications with automatic test equipment (ATE) and in "clean" manufacturing or process control operations. Attractively designed, yet rugged in construction, the 701 can serve equally well in the office and in the field for data collection. Possible environmental exceptions for 701 usage are corrosive or otherwise hostile surroundings and extreme heat or cold.

Applications of the 702 Floppy-Disk  $\mu$ Package, with the 701 or with other equipment, include data collection, data processing, and process control. Since the floppy-disk drives are mechanical devices, the 702's environmental requirements are more restrictive than those of the 701. For example, the possible existence of grit on the diskette surface can damage the recording medium. Even so, the 702 is sturdy yet cleanly designed and uses an industry-standard recording format.

The rack-mounted 701 with a 24-slot STD BUS card cage is priced at

under \$1700 in single quantities. The rack-mounted 702 is priced at under \$2700. Deliveries of both  $\mu$ Packages are planned for the end of January 1982.

## Product Management Team Identified for STD Series 700 $\mu$ Package

Neil Wiseman and Roger Born have been assigned to the management team that will market the STD Series 700  $\mu$ Package — the first phase of Pro-Log's new product line. Neil has been named Program Manager. Roger has been appointed Marketing Manager.

Matt Biewer is heading up the R&D for the new product line, whose first phase will be introduced at Wescon/81.

Both new managers bring extensive experience to their team roles. Neil, who is presently marketing services manager, has spent more than 20 years in engineering, manufacturing, and project management. Before he came to Pro-Log, he worked for Singer Business Machines, Frieden, and Memorex.

Roger, who is currently sales manager, also has more than 20 years of experience in project management and systems engineering (hardware and software). Before coming to Pro-Log, he worked for Texas Instruments, Univac, and the Government.

## Pro-Log's Low-Cost 7387 Floppy-Disk Controller at Wescon/81

Pro-Log's new 7387 STD BUS peripheral interface card is a low-cost, 5V intelligent controller that can operate one to four floppy-disk, Shugart 400/450 and 800/850 series drives, or equivalent.

The 7387 supports IBM's 3740, single-density format (FM) on one-sided or double-sided drives. Standard 8-inch or 5¼-inch mini-floppy operation is selectable through a single jumper on the card.

Any one of 15 fixed-format commands issued by the system processor card controls the 7387. To simplify programming, these multibyte commands are storable as a lookup table in memory. The 7387 is compatible with the 8085, Z80, 6800, and other microprocessor systems.

An interrupt system on the 7387 notifies the processor card of drive status and data availability. Timing is crystal controlled. It requires no adjustment, which minimizes field errors and OEM effort.

The 7387 interfaces with the one-to-four floppy-disk drives via an industry standard, 50-pin connector and a single, mass-terminated, 3-meter (10 ft) ribbon cable. All card components are multisourced and manufactured to industry standards.

The 7387 card is priced at \$295 (quantities of 1 to 9). Deliveries will begin in November 1981. Orders will be accepted after Wescon/81 in September.

---

## Pro-Log in Booths 1631 and 1633 at Wescon/81

Don't forget to stop by at *Booths 1631 and 1633* when you attend Wescon/81 in San Francisco in September.

This year's show will be held in Brooks Hall/Civic Auditorium, September 15-17.

For a complimentary registration form, contact your local Pro-Log representative, or call Elma at our home office: (408) 646-3655. ■



## STD BUS Cards Available from Pro-Log

STD Category	Pro-Log No.	Name	Use	User's Manual
System support cards (non-4½" x 6½") including motherboards	7101	Motherboard ¼ rack	Implement STD Bus backplane interconnection scheme	106418
	7102	Motherboard ½ rack		
	7105	Motherboard ¾ rack		
	7106	Motherboard full rack		
Peripheral interface	7301	RS-232 & TTY driver/receiver	μP/RS-232 & μP/TTY interfaces	106420
	7303	Keyboard/display card	General purpose control panel card	105999
	7304	Dual UART card	Provides 2 independent RS-232C serial data comm. channels	106242
	7308	Multichannel counter/timer	Fully programmable, stand-alone peripheral	106931
	7320	Priority interrupt card	Universal, 8-input priority interrupt controller	106178
Industrial I/O	7501	Medium power DC driver	Provides 16 independent DC output circuits	106691
	7502	SPST relay output card	Eight independent SPST dry reed relays	106646
	7503	Optoisolated input card	Provides 8 independent AC/DC inputs (4.5 -80 VAC/VDC)	106678
	7504	Triac output card	Eight independent solid state AC relays (triacs)	—
	7506	Optoisolated input card	Provides 8 independent AC/DC inputs (70-280 VAC/VDC)	106678
	7507	General purpose interface card	Provides interface between STD BUS & I/O module mounting rack	106394
Digital (TTL) I/O	7601	Input/output port card	Provides four 8-bit gated input ports & four 8-bit latched output ports	106662
	7602	Output port card	Provides eight 8-bit latched output ports	106663
	7603	Input port card	Provides eight 8-bit gated input ports	106664
	7604	TTL I/O card	Eight ports configurable as input or output, or as output with readback	106665
	7605	Programmable TTL/I/O card	Provides 32 I/O lines, each programmable as input, output, or output with readback	106666
Memory	7701	Memory card (16K byte static RAM)	Provides sockets for 16,384 bytes of read-write or PROM memory	106690
	7702	Memory card (16K byte 2716 EPROM)	Provides sockets for 16,384 bytes of EPROM memory	106965
	7703	Nonvolatile CMOS RAM card (16Kx8)	Provides 16,384 bytes of high-speed (250ns), non-volatile static CMOS RAM	106293
	7704	Byte-wide memory card	Provides 64 kilobyte memory capacity	—
	7705	Memory card (32K byte 2732 EPROM)	Provides sockets for 32K bytes of EPROM memory.	—
Processors	7801	8085A processor card	Provides a buffered and fully expandable 8085A μP with onboard RAM and PROM sockets	106903
	7802	6800 processor card	Provides a buffered and fully expandable 6800 μP with onboard RAM and PROM sockets	—
	7803	Z80A processor card	Provides a buffered and fully expandable Z80 μP with onboard RAM and PROM sockets	106777
	7804	Z80 CPU card	4 MHz with four 28-pin byte-wide memory sockets and onboard timer/counter	107627
Utility	7901	Utility card extender	Extends cards out of card cage for easy access	—
	7902	Utility DIP card	Printed circuit card for prototyping with dual-in-line (DIP packaging)	—
	7903	General utility card	Printed circuit card for prototyping with 0.100 in. (2.54 mm) grid hole pattern	—
	7904	Decoded I/O utility card	Printed circuit card for prototyping I/O circuitry	106406
	7920	Single in-rack power supply (+5V)	Output drives STD logic power bus (+5V and logic ground)	—
	7921	Triple in-rack power supply (+5V, ±12V)	Provides +5V at 3A min to the STD logic bus & ±12V to STD auxiliary power bus	—



# PROM Programmer News

## Addenda to M980 User's Manual

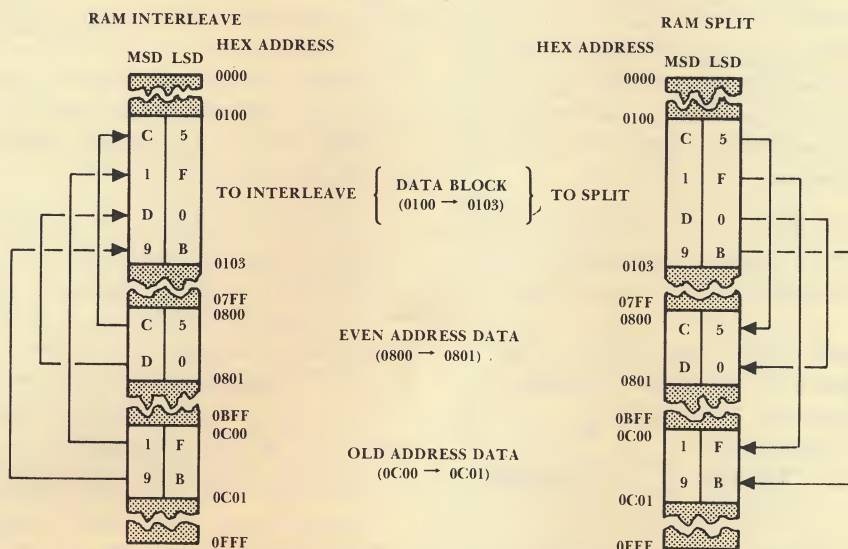
### Two Buffer Edit Modes and RS232C Address Offset Capability Added to M980 Interface Operations

A RAM buffer interleave mode and a RAM buffer split mode have been added to the buffer edit functions of Pro-Log's M980 control unit. These functions can be used for manipulating 8-bit and 16-bit buffer data into a more useful form. The address offset sequence allows a default address substitution for the first address received or listed during RS232C communication operations.

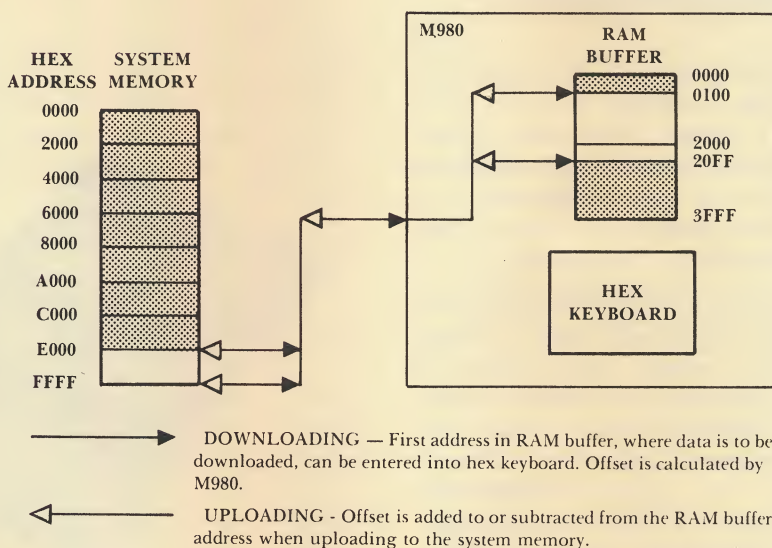
The RAM interleave operation allows 8-bit data stored in two separate blocks to be alternately stored in a defined area in the first half of the RAM buffer. The RAM split operation allows 16-bit data stored sequentially anywhere in the first half of the RAM buffer to be divided into two separate 8-bit data blocks. These editing operations are particularly helpful in preparing byte-wide PROMs for use with a 16-bit microprocessor.

During the address offset of the 9818-RS232C interface sequence, the M980 automatically determines the address offset from the first address selected to store the downloaded data in RAM memory. Then, this offset is subtracted from or added to all addresses in the receive (downloading) and send (uploading) modes.

These additional operating features are included, at no additional cost, in all M980 control units built after July 1, 1981. Units built before July 1, 1981, can be updated by Pro-Log for \$100, with a 5-day turnaround.



EXAMPLES OF INTERLEAVE AND SPLIT  
IN A 4K-BYTE RAM BUFFER.



ADDRESS OFFSET SEQUENCE (9818/RS232C Interface).

For further information on the updating service, please contact Pro-Log's Customer Service Depart-

ment. For copies of the two addenda, check 63.



# Warning to PROM Users Read-Compatible PROMS May Not Be Program-Compatible

PROMs are normally considered interchangeable because they are read-compatible. But this is not always true. Users sometimes fail to account for the method of programming involved. **PROMS that are completely interchangeable in your system may differ in their respective programming algorithm and hardware requirements.**

Note that the following PROMs are read-compatible but **not** program-compatible:

**Intel 2732 & Intel 2732A**  
**Intel 2764 & Mostek MK2764**  
**National NMC2732 & National NMC2732A**  
**T.I. TBP14S10 & T.I. TBP24S10**

The consequences of programming a PROM with incompatible hardware are best exemplified in an *Electronic Products* article by Pro-Log's president Ed Lee. He states that "the Intel 2732 and 2732A are read-mode compatible, but if you program a 2732A to the specs for a 2732, you can kiss it goodbye." (See opposite page for article.)

For guidance in picking the correct hardware to program the more than 450 PROMs that Pro-Log supports, consult our 1981 "Price List and Short Form Catalog," or our Series 90 PROM programmer brochure, featuring the M980 control unit. Check 64 & 65, respectively, for copies of the catalog and brochure.

## Pro-Log's Updated Price List & Short Form Catalog Available

Pro-Log has updated its price list and catalog to reflect its latest products. Prices in this handy 9x7, 64-page document are effective as of April 5, 1981. Descriptions of Pro-Log's full lines of PROM programming and microprocessor products are included as well as explanations of Pro-Log's courses, seminars, and literature.

The revised price list and catalog is a complete, stand-alone document. It is designed for the customer, providing an easy-to-use guide for identifying and ordering Pro-Log's products. Also, it contains lists of the sales representatives and international distributors that support Pro-Log. For a copy, check 64. ■

## Updated M980 Brochure Available

Pro-Log's Series 90 PROM Programmer brochure, featuring the M980 Control Unit, has been updated to reflect the latest PROMs that Pro-Log supports, the interfaces with new development systems, and the latest price changes.

The brochure includes a description of Pro-Log's new generic gang modules, which are capable of programming, simultaneously, eight PROMs from any family of 5V MOS devices available as of May, the time the updated brochure was printed. It also contains a personality module selection guide that has been updated to identify the Pro-Log hardware used for programming and bulk-erasing the latest EPROMs.

New development systems that the M980 now interfaces with, through

the RS232C communication channel, are Systems 8 and 29 manufactured by Advanced Micro Computer.

To obtain a copy of the updated brochure, contact your local Pro-Log representative, or check 65. ■

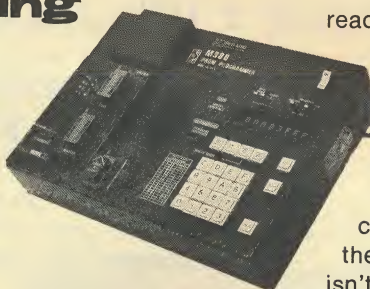




## Programming & Erasing



Ed Lee, President  
Pro-Log Corporation, Monterey, CA



There are alternatives in programming EPROMs. You can buy a programmer from one of several PROM programmer manufacturers, you can build your own programming device, or you can have the PROMs programmed by a distributor. Because they are reprogrammable, EPROMs are often an integral part of a design and debugging process and might be modified several times a day. In this case, it's impractical to waste time having them programmed by distributors.

### Keep an eye on the specs

Whether you build or buy your programming equipment, make sure it meets the PROM vendor's specification *to the letter*; otherwise, you may lose devices or experience data retention problems, and then have no legitimate recourse. Several PROM programmer manufacturers have their equipment approved by PROM vendors before the equipment is released. Nevertheless, you should still be alert — PROM vendors sometimes change their processes and programming specifications after the PROM has been in production awhile. Make sure that the programmer manufacturer you choose is committed to staying in touch with the PROM vendors on an ongoing basis and to alerting you of changes that come along in programming requirements. If you build your own equipment, stay in touch with the PROM vendor yourself to keep up with changes.

Be sure your PROM is thoroughly erased before program-

ming. Inadequate erasing is one of the major reasons for data retention problems in EPROMs. PROM vendors spell out light intensities and durations for erasing EPROMs, but reliable equipment for measuring these characteristics is hard to come by. You can still get into trouble because of where you place a device under the erase light or because of the age of the bulb.

A simple way to check your erase light is to place one or more programmed PROMs under the light at the distance and within the zone where devices will normally be placed for erasing. Turn on the erase light and, at one or two minute intervals, turn off the light and blank check the PROMs. Then place the PROMs under the light again and continue erasing and blank checking. Note the total erasing time required for the last PROM to read as blank, multiply it by five, and then erase all devices for that amount of time. This should be done because the erasure discharge phenomenon follows an exponential curve; thus, the external readout only verifies that the discharge is just below the readout threshold — not that the device is fully erased. The additional erase time allows for adequate discharge below the threshold and for IC chip variations and bulb aging. You should perform this test for each PROM type from each vendor. Fortunately, lot-to-lot variations of a given PROM type from one vendor are small.

During or after programming EPROMs, it's better to check the

readout of all bits at two extremes of load and power supply rather than at nominal settings. In fact, some PROM vendors are requesting that PROM programmer manufacturers incorporate this capability into their equipment even though it isn't explicitly spelled out in the vendor's specifications.

Handling of EPROMs, although not directly related to programming and erasing, is an important and often overlooked consideration. For example, because EPROMs are MOS devices, they can be damaged or even wiped out by static discharge. Take anti-static precautions when handling the devices. Grip the device end-to-end and avoid contact with any leads unless you're grounded.

### Don't zap 'em

"Cold sockets" are a must for most 32K and larger EPROMs. When plugging these newer PROMs into or removing them from sockets, make sure that the power is off. This is necessary because as you plug or unplug devices, their pins make or break contact in an uncontrolled sequence. If power is present, sneak current paths may be set up that can cause permanent damage to devices. For example, one vendor's 32K PROMs exhibited a 25% failure rate when a customer plugged in parts with the 5V present. The vendor was not aware of the potential problem until after it occurred in the field. A second manufacturer of the "same device" claimed no similar problem because his masks have slightly different geometries that avoid the sneak current paths.

One final point to keep in mind — PROMs that are "read-mode" compatible may not be program compatible. For example, the Intel 2732 and 2732A are read-mode compatible, but if you program a 2732A to the specs for a 2732, you can kiss it goodbye. ☐



## E<sup>2</sup>PROMs and EPROMs: How they Differ

### PM9064C and PM9075A to Support Intel and Hitachi E<sup>2</sup>PROMS

Until recently, an erasable PROM was one that could be erased with ultraviolet (UV) light only. Now, PROMs can be erased electrically as well, which has spawned a new acronym: E<sup>2</sup>PROM (Electrically Erasable PROM). The old acronym, EPROM, still remains, but it designates the UV erasable PROM. Electrically erasable PROMs are also referred to as EEPROMs or EEp/ROMs.



PM9064C

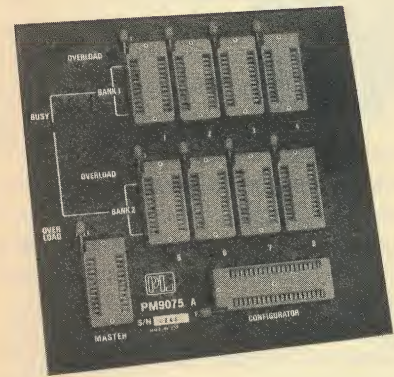
#### Advantages of E<sup>2</sup>PROMs

E<sup>2</sup>PROMs offer several advantages not found in EPROMs. For example they can be erased electrically without removing them from the PROM programmers. EPROMs, on the other hand, must be removed, exposed to UV light, rewritten electrically with a new program, and then replaced in the programmer.

The manufacturing cost of E<sup>2</sup>PROMs is potentially less than that of EPROMs. The initial cost of making the dies for E<sup>2</sup>PROMs, however, is twice that of EPROMs,

but subsequent costs are less. For example, the E<sup>2</sup>PROM's plastic package, instead of the EPROM's ceramic package that requires a quartz window, realizes great savings. Also, E<sup>2</sup>PROMs cost less to test, because they can be erased quickly between test patterns.

Intel's recently introduced E<sup>2</sup>PROMs, the 2808 (1Kx8) and 2816 (2Kx8), use a proprietary, floating



PM9075A

PM9064C Personality Module:

E <sup>2</sup> PROM	PINOUT ADAPTER	CONFIGURATOR
Intel 2808	PA24-24 (\$175)	CP-1Kx8 (S3) (\$70)
Intel 2816	PA24-24 (\$175)	CP-2Kx8 (S4) (\$70)
Hitachi HN48016	PA24-26 (\$175)	CP-2Kx8 (S3) (\$70)

silicon gate technology. Also, both E<sup>2</sup>PROMs offer the unique advantage of single-byte-erase or chip-erase modes.

#### Pro-Log Support

Pro-Log demonstrated the programming of E<sup>2</sup>PROMs at ELECTRO/81 in April, using its PM9064C and PM9075A personality modules. The PM9064C is for use in single PROM programming. The PM9075A can be used for gang programming 8 PROMs at a time.

Pinout adapters and configurators for the first three E<sup>2</sup>PROMs that Pro-Log will support with its generic PM9064C are available now.

The model numbers for the configurators used with the E<sup>2</sup>PROMs each

identify a pair—one configurator for programming and one for chip-erase. The chip-erase of the Intel E<sup>2</sup>PROM takes 10 ms, while that of the Hitachi E<sup>2</sup>PROM takes one second.

(Continued on Page 9.)

#### Users' Manuals Available for PM9075A and PM9076 Gang Personality Modules

A 15-page user's manual is now available for each of Pro-Log's PM9075A and PM9076 generic gang personality modules, which are designed to operate with the M980 and M910A PROM programmer control units.

(Continued on page 14.)



(Continued from page 8.)

Gang configurators for the first three E<sup>2</sup>PROMs that Pro-Log will support with its generic PM9075A are available now:

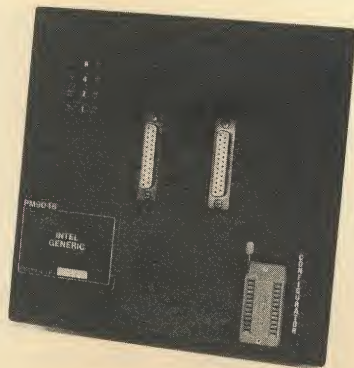
#### PM9075A Personality Module

E <sup>2</sup> PROM	GANG CONFIGURATOR
Intel 2808	GC-21 (\$200)
Intel 2816	GC-22 (\$200)
Hitachi HN48016	GC-23 (\$200)

The model numbers for the PM9075A's gang configurators used with the E<sup>2</sup>PROMs each identify a pair—one configurator for programming and one for bulk-erase.

### Pro-Log's PM9048 Supports Intel's New 3632 Bipolar PROM

Pro-Log's PM9048 generic personality module is ready to program Intel's new model 3632, 4Kx8 bit, bipolar PROM. The PM9048 is one of our PM9000 series of plug-in modules that offer a cost-effective means of programming an ever expanding range of bipolar and MOS PROMs.

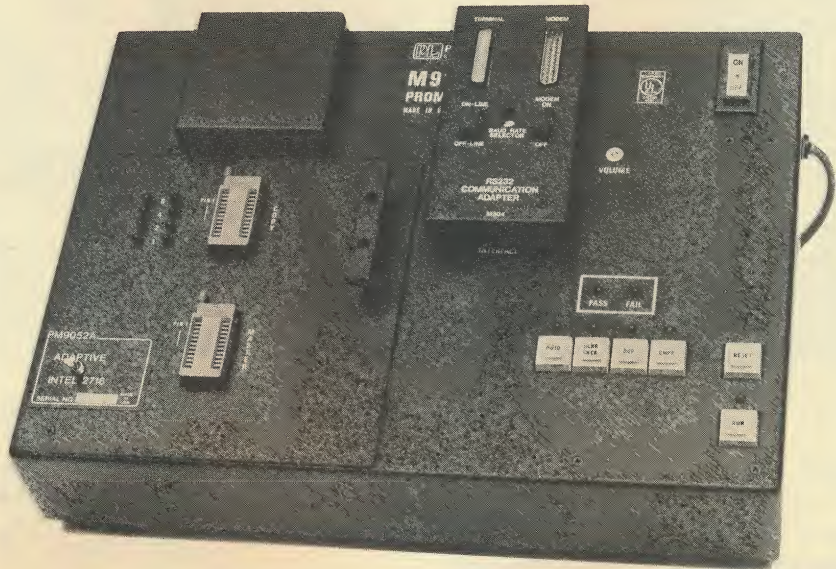


PM9048

The appropriate pinout adapter and configurator for use in conjunction with the generic PM9048, when programming the 3632 PROM, are the PA24-25 and CA4Kx8(H), respectively.

Availability of the PM9048 is two to four weeks; the single-unit price is \$600. Availability of the PA24-25 adapter (\$120) and the CA4Kx8(H) configurator (\$35) is also two to four weeks. ■

#### RS232C Interface



M910A with RS232C Interface

### Pro-Log's New RS232C Communication Interface Option for M910A PROM Programmer

Pro-Log's new RS232C communication interface option, to be introduced at Wescon/81, allows the low-cost M910A PROM programmer to be used with development systems, computers, terminals, and peripherals or modems. It also enhances the M910A's utility in field applications.

Main features of the RS232C interface include key-selectable popular communication formats (supported by the M910A's software), remote control of duplicate operations, and switch-selectable baud rate from 50 to 9600 baud.

A 4K-to-16K byte battery-backed RAM buffer and PROM-based

software comprise the interface option. The M304/RS232C adapter is additional.

The M910A with the communication option, including a 4K-byte RAM buffer, is priced at \$1850. The M394/RS232C adapter sells for \$250. Availability is September 1981. Previously purchased M910As can be upgraded to include the option for \$550 each.

A description of the communication interface appears in a new, 24-page brochure describing the M910A PROM programmer. The brochure will be available at Pro-Log's booth at Wescon/81. ■



## **Pro-Log's Vendor Interface: Quality Payoff for the Customer**

Recently, Pro-Log established an official interface with PROM vendors, to keep abreast of the rapid changes that mark today's PROM industry and to pass this valuable information on to our programming customers.

Pro-Log's vendor interface function is handled by Chuck Cech, Director of Product Marketing. In the six years that Chuck has been with Pro-Log, the state of the art in PROM design has changed radically. PROM manufacturers have quadrupled in number. And the quantity of different PROMs and programmable devices available today has increased a hundredfold.

### **Early Years**

In the early years following 1973, when Pro-Log was securing a firm foothold in the PROM programming business, we recognized the strategic wisdom of establishing a rapport with manufacturers of the PROMs that our products could program. At that time, communication between Pro-Log and its PROM vendors occurred at an informal engineer-to-engineer level. "When new parts or device changes came along," Chuck explained, "Pro-Log would get a phone call from a PROM company's design engineer. We, in turn, responded by setting up a new engineering project to accommodate the manufacturer's changes."

The changes in those early days had little or no effect on programming yields, which is the sensitive issue today. "Although manufactured parts were considered state of the art at that time," Chuck said, "they were 'forgiving.' In other words, they were relatively immune to noise spikes and programming pulse width, and height tolerances were broad."

### **Vendor Approved Process**

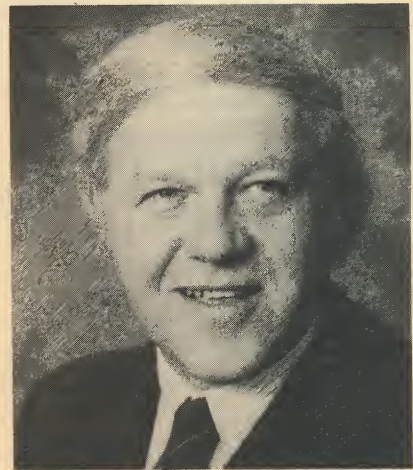
Nevertheless, Pro-Log was determined to provide its customers with a product that it felt certain would fulfill the programming requirements of its PROM manufacturers. So it initiated a "Vendor Approval" process, the process we use today, although it has been greatly streamlined and strengthened since its inception. All of Pro-Log's personality modules are submitted to the manufacturers of the PROMs that the modules are designed to use. The manufacturers test our modules and approve them before we release them to our customers. This assures us that the modules meet the PROM manufacturer's specifications and that they have actually programmed PROMs at the manufacturer's plant.

### **Today's Market**

Yesterday's PROM market is a long step back from what it is today. PROM manufacturers now number 25, of which 5 are based in Japan. The number of PROMs available to customers is approaching 500, plus other programmable devices such as the single chip microprocessor and programmable logic. Industry marketers estimate that more new devices will be introduced in the next five years than have been available in the last five years.

Device density has increased by a factor of 32. New technologies, such as CMOS and HMOS, are now prevalent. Also, registered PROMs and multiplexed PROMs are now on the market, which further complicates our programming job.

The sensitive issue in today's PROM industry is programming yield. "It's not uncommon for PROM manufacturers to change programming algorithms as many



**Chuck Cech,  
Director of Product Marketing**

as three times, after a part has been introduced and samples have been delivered," Chuck Cech states. "These changes are made expressly to improve programming yield."

### **Finding Answers**

In the light of these rapid changes, the vendor interface is much more critical than before. The informal, engineer-to-engineer contact is no longer valid.

Pro-Log recognizes that the customer has much more at stake in his product investment than he ever did before. He needs more answers to his programming questions.

Pro-Log is committed to find those answers. In the words of Chuck Cech, "The long-term goal of Pro-Log's 'Vendor Interface' is to create a relationship with PROM manufacturers that will ultimately result in the customer getting the best quality PROMs and PROM programmers." This relationship is truly interdependent — one cannot function without the other. Its payoff, as Chuck Cech firmly believes, "is a more satisfied customer." ■



# People at Pro-Log



**Order Entry Group**

Anne Rounsville Anne-Marie Cox Nancy Russo Woody Bowers Connie Keel

## Order Entry: Human Contact Point for the Customer

One of the critical hot spots at Pro-Log is "Order Entry," where four people process about 280 incoming orders each week over the telephone, via TWX, and through the mail. This small, efficient group fields all the customer request orders and "cuts" the paperwork for shipping Pro-Log's products to more than 4000 active customers around the world.

### Typical Day

The incessant ring of a phone, on one of the three order desks staffed by Connie Keel, Nancy Russo, and Woody Bowers, heralds the start of a typical day in "Order Entry." It's 8 a.m. PST in Monterey. But Pro-Log's representatives in the eastern part of the country are already well into their working day. Some of the reps are waiting to call in their orders to Pro-Log. Within a few minutes, the sound of two other phones reinforces the implied urgency of the first one.

The day's work then begins in earnest. Voices, quiet and courteous, replace the harsh ringing of the phones. Ball point pens move swiftly over order forms, making neat notations that will eventually speed Pro-Log's products on their journey to a waiting customer.

### Efficient Space

Located on the second floor of Pro-Log's Building 1, the order entry department looks out onto the Monterey Airport. Windows frame the magnificent sweep of the Monterey Bay beyond. The three order desks form an arc facing the windows. A fourth desk sits behind the other three. A terminal next to each desk provides access to an HP3000 computer system, the information bank for order entry.

Anne Rounsville at the fourth desk keys in all the handwritten orders to the system. File cabinets blanket the back wall. They house a complete history of Pro-Log's 4000 customers,

including Eastman Kodak, Bell Telephone, General Electric, Western Electric, and Westinghouse.

The physical arrangement of the department, designed by the group itself, is characterized by functional space. There is room to move around without bumping into someone. It enhances the flow of information and communication between the group's members.

### Order Problems

Taking a customer's order over the phone is not as simple as it may seem. Many items of information need to be checked that require accessing the computer. For example, if an order is requested by an existing customer, the shipping address must be verified, since in some cases the ship-to locations vary. The computer can project on each terminal screen the most current order for a given customer, against which the new order can be checked.

Every organization has its problems and "order entry" is no exception. Connie Keel, the group's supervisor, cites the lack of information as being the main problem when processing

\_\_\_\_\_ (Continued on Page 12.)



## Director of Engineering Appointed at Pro-Log

John Manning, a former manager of the Integrated Circuits Laboratory at Hewlett-Packard's Loveland Instrument Division, has been appointed to Pro-Log's newly created position of Director of Engineering.

While at Loveland, John managed and directed the IC lab's new technology development in silicon, thin films, computer-aided design, IC test and assembly engineering, and process sustaining engineering. Also, John served as a member of HP's Corporate Board of Directors for Design Automation for five years and chaired HP's Instrument Group Design Automation Task Force.

Commenting on his personal notions and experience, John says,



**John Manning**  
Director of Engineering

"I enjoy diversity and change while at the technical forefront. My strengths lie in a broad range of circuit, device, process, and manage-

ment areas." Planning also brings him personal satisfaction. "I enjoy determining long-range directions and implementing the strategy to get there," he explains.

John's educational background includes BS, MS, and PhD degrees in electrical engineering. He is currently serving as an Adjunct Professor of Electrical Engineering at the University of Hawaii. Also, he is on the Adjunct Faculty of Engineering at Columbia Pacific University.

John is no stranger to the Monterey Peninsula. He and his wife were raised here. They have six children. John's outside interests are broad. They include loudspeaker synthesis, classical guitar and musicology, Shoitokan Karate, and photography.

---

*(Continued from Page 11.)* \_\_\_\_\_

orders from customers. "We need a complete PO number from the requesting company," Connie explains, "also the telephone number and the buyer's or purchasing agent's name must be complete."

Another problem, according to Connie, is that people call the customer service desk instead of the order desk when they follow up or call in an order. The order desk number is (408) 646-3564, with six lines available for incoming calls from 8 a.m. to 5 p.m., including lunch, Mondays through Fridays.

### **Quick Response**

The order entry group can move quickly when the need arises. Woody Bowers gives one example: "I took one special order from a customer in the morning," Woody states, "processed it and had the part on a plane to the customer by late afternoon." Normal shipping time for stock

items is two to three days. Product delivery for new customers generally takes two weeks because of required credit verification and confirming paperwork.

### **Job Satisfaction**

Individual job satisfaction is high in "Order Entry." Group members share a common reason for liking what they do: the unpredictability of what the next phone call may bring. In Nancy Russo's words, "The job is by no means monotonous, as people might suppose. The main challenge is to satisfy the customers, whose needs are not always the same. This is where the unpredictability comes in." She adds with a smile, "And then there are some fun things, like finding out the kind of weather people are having elsewhere in the country, and the spellings and whereabouts of towns with the most unlikely sounding names."

Mondays and Fridays are generally the busiest days for taking orders.

"Things get kind of wild on these peak days," Connie remarks, her eyes rolling, and we have to call in our backup, Anne-Marie Cox." But the evidence to support what she said is not there, on a day in the middle of the week, although the group is busy.

All the factors that contribute to chaos are present — the harsh ringing of phones, the energetic crosstalk of group members, the hurried movement of people. But the scene reflects a sense of order and controlled discipline in which people are on top of their jobs. ■

---



# Courses & Seminars

## Free Half-Day Seminars

### Separate Pro-Log Seminars on Microprocessors and STD BUS

In keeping with Pro-Log's revised policies on courses and seminars, we have now expanded the content of the original single seminar. The material is now slanted to two separate audiences: those interested in microprocessor design and attendant economic factors, and those interested in the technical aspects of the STD BUS.

#### **Management Seminar on Microprocessors**

This seminar focuses on the advantages and pitfalls of designing with microprocessors. It is geared to corporate decision-makers, engineering managers, and others who are looking for cost-effective solutions to their design problems.

Seminar topics include an evaluation of the important business factors to consider when selecting a microprocessor, the documentation of microprocessor-based systems for manufacturing and field service, and the use of effective design methods, to unlock success and profits, based on Pro-Log's engineering approach.

#### **STD BUS Technical Seminar**

Technical in nature, this seminar reinforces the management seminar. It introduces the STD BUS and explains how to utilize it to solve your microprocessor application problems. Real-world examples are presented, with adequate time scheduled for discussion and the interchange of ideas.

#### **Seminar Schedules**

Both seminars are free and each one lasts half a day. They are held at different regional locations across

the country. Please contact Pro-Log or your local representative for the current seminar schedule and registration information.

## Improved Microprocessor Design Course

Pro-Log has recently revised its design course policies and procedures, to improve its precourse support, encourage group attendance, and improve course content.

Pro-Log's design course is structured for the design engineer and the engineering manager. It provides an introduction to microprocessor

*(Continued on Page 14.)*



**Student Ed Marbach and Instructor John Stone  
at Pro-Log's Microprocessor Design Course**



(Continued from Page 13.)

technology. Also, it offers detailed instruction on how to design and document microprocessor-based control systems in the same way that hard-wired logic systems are designed and documented.

### Course Schedule

The design course schedule for the balance of 1981 provides basic East Coast/West Coast availability for attendance. It also includes some open time for scheduling company in-house sessions at group discount rates.

Date	Location & Contact
Aug. 31-Sept. 4	Monterey, CA* Pro-Log Corp. (408) 646-3655
Oct. 13-16	Peabody, MA Martindale Assoc. (617) 942-0514
Oct. 27-30	Northern, NJ Tecnimat, Inc. (201) 569-4200
Dec. 7-11	Monterey, CA* Pro-Log Corp. (408) 646-3655

### Course Duration

Regional courses are 3½ days long. The Monterey courses last for 4½ days and offer a greater variety of lab equipment to work with than do the regional courses. Also, the Monterey attendees have the opportunity to discuss their specific products with Pro-Log's design engineers.

### Evening Labs

Evening lab sessions will be offered at all the above courses, to give students hands-on learning (experience with the popular 8085 and Z80 microprocessors).

\*Pro-Log has a block of rooms reserved at corporate rates for your convenience. Please contact Elma Barnes at Pro-Log to find out the location of the course: (408) 646-3655.

### Registration Fees

The following course fees are effective August 1, 1981:

Monterey Design Course	\$400
Regional Design Course	\$550

Group Discounts (apply only to two or more students from the same company attending the same course):

No. of Attendees	Discount	Monterey Fee Each Attendee	Regional Fee Each Attendee
2	10%	\$360	\$495
3	20%	\$320	\$440
4	25%	\$300	\$410
5 or more	29%	\$285	\$390

Please send all registration fees, or commitment by purchase order, to Pro-Log no later than two weeks before the scheduled beginning of the course.

### Precourse Literature

Information relating to the course will be sent to each registered student two weeks before the course is scheduled to start.

(Continued from page 8.)

The PM9075A programs 24-pin 5V EPROMs and E<sup>2</sup>PROMs (40 PROM types from 16 manufacturers). The PM9076 programs 28-pin 5V EPROMs (8 PROM types from 6 manufacturers). Both modules can each program eight PROMs simultaneously.

Each manual has six sections. The first section briefly describes the features and capabilities of the module. The remaining five sections detail the operation of the module. Typical duplication times for programming eight PROMs at a time are given. Also included are details of the automatic and man-

ually controlled self-test features, the overload detection circuits, and the diagnostic procedures for responding to detected overload conditions.

For a copy of the PM9075A user's manual, check 66; for a copy of the PM9076 user's manual, check 67.



Anne Roberts  
Advertising Manager

### New Post of Advertising Manager Filled

Anne Roberts, former manager of administration, advertising, and personnel at Slautterback Corporation on the Monterey Peninsula, has joined Pro-Log to assume the responsibilities of Advertising Manager.

In this newly created position, Anne will manage and direct public relations and advertising for Pro-Log's STD product line and PROM programmer line.

During her career, Anne has worked at Young and Rubicam Advertising, in New York, and for Geyer Morey Ballard in New York. Also, she has worked as a lawyer for the Ford Foundation and in international service for Pan American, London. Anne earned an MBA degree from Columbia University and a BBA from Cornell University.



If you would like more information regarding Pro-Log products, fill out the form below and mail to:



2411 GARDEN ROAD  
MONTEREY, CA 93940

- ☐ Add my name to your mailing list.
- ☐ Change my address information. (Please check mailing label.)

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City/State \_\_\_\_\_ Zipcode \_\_\_\_\_

Country \_\_\_\_\_

- ☐ Please send me more information. I have checked the box which corresponds to the item covered in the August issue of *the Buffer*.

- |   |  |
|---|--|
| <input type="checkbox"/> 60 STD BUS Specification & Practice                              | <input type="checkbox"/> 64 1981 Price List & Short Form Catalog     |
| <input type="checkbox"/> 61 Series 7000 STD BUS Technical Manual and Product Catalog      | <input type="checkbox"/> 65 Series 90 PROM Programmer, M980 Brochure |
| <input type="checkbox"/> 62 STD Users' Group Information                                  | <input type="checkbox"/> 66 PM9075A User's Manual                    |
| <input type="checkbox"/> 63 M980 Addenda: Two Buffer Edit Modes and RS232C Address Offset | <input type="checkbox"/> 67 PM9076 User's Manual                     |

☐ Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- ☐ I currently use, or I have used, the following Pro-Log products:

- |   |   |
|---|---|
| <input type="checkbox"/> PROM Programmers | <input type="checkbox"/> Microprocessor Systems |
| <input type="checkbox"/> System Analyzers | <input type="checkbox"/> Design Course          |





Pro-Log Corporation, 2411 Garden Road,  
Monterey, CA 93940

07870NELST3X

T NELSON  
CONSULTANT  
BOX E  
SCHOOLEYS MOUNTAIN

NJ 07870